09
2022

ACS
magazine

Let research grow and flourish

From lab to therapy

Valorisation within ACS

Citizen science within ACS

ACS transcending collaboration

Amsterdam Cardiovascular Sciences

Mission

To design novel treatment strategies
to prevent and cure cardiovascular disease.

Vision

To strengthen our top European Cardiovascular Research Institute
by organizing education, research and clinical activities
within the current 5 research programs.

heart failure and arrhythmias

pulmonary hypertension and thrombosis

micro circulation

atherosclerosis and ischemic syndromes

diabetes and metabolism

Word from the directors

What a wonderful start to 2022, we are back working on location and scientific discussions and meetings are taking place in person rather than on a flat screen. After a long period of hibernation, we are meeting with old and new colleagues, and are regularly surprised by the height of our new colleagues as, on screen, everyone appeared to be equally tall. This may actually be one of the positives of our digital world as tall people tend to have an advantage in life compared to the shorter ones, and while we do want to support diversity, diversity in body size should not be a discriminating factor.

This year we have begun preparations for our audit which will take place in 2023. Our mid-term evaluation took place digitally on the 22nd and 24th of June 2021, and we received wonderful and constructive comments from our international advisory board. Thanks to everyone who helped prepare the audit report and actively participated. We would like to urge all of our principal investigators to fill their PURE page to showcase their science.

It has also been a sad year, as we lost one of the founding fathers of our research institute, Prof. Nico Westerhof, who was a world-leading scientist in quantitative hemodynamics.

In this year's issue, we highlight the importance of valorization at Amsterdam UMC in general and ACS in particular. In interviews with the experienced colleagues, Yigal Pinto, Geert Boink and Jan Willem Buikema, different aspects of valorization are addressed. It is 18 years ago that the Dutch government made valorization one of the key points of science policy. Since then, we have all faced the increasing emphasis on its importance when writing grants and midterm and end term reviews. So, it is not surprising that the ACS has appointed Geert Boink their Valorization Officer (for 2 days a week). Geert and Jan Willem, were recently appointed as fellows of translational Cardiology, together with Yigal they all have hands-on experience in valorization and are readily available for any questions you may have.

Arthur Wilde & Jolanda van der Velden

Jolanda van der Velden & Arthur Wilde
Directors of ACS

Contents

Valorization within ACS

Citizen science within ACS

ACS transcending collaboration

Colophon

Design and layout:
Luumen

Print:
Libertas Pascal

Photographs:
DigiDaan

English editing:
Lisa Kohn

ACS Directors:
Arthur Wilde & Jolanda van der Velden

Website:
www.amsterdamumc.org/acs

Coordinators:
Anne-Lieke van Deijk
Patricia Vlasman
Anna Spiering
Jolanda van der Velden

ACS is a research institute
of Amsterdam UMC

In Memoriam

Nicolaas (Nico) Westerhof

On April 25th 2022, Prof. Nico Westerhof passed away. He studied physics at the University of Utrecht, the Netherlands and received his MSc degree in 1962. From 1964 to 1966, he worked at the Department of Physiology of Georgetown University in Washington, DC, USA, and from 1966 to 1969, he was employed at the Department of Biomedical Engineering, The Moore School of Electrical Engineering at the University of Pennsylvania in Philadelphia, USA. He received his PhD degree from the University of Pennsylvania in 1968.

In 1969, Nico Westerhof was recruited by Prof. Knoop to work at the Department of Physiology of the Medical Faculty of the Free University (Vrije Universiteit) Amsterdam, the Netherlands. He worked in the Department of Physiology from 1969 to 2002, where he became a lecturer in 1971 and a full professor in 1980. As emeritus professor, he dedicated his time to mentoring many PhD students at the Department of Pulmonology of the VU University Medical Centre (VUmc). His inspiring lectures and enthusiasm for science were highly valued, and despite being an international leading scientist, he was always easy to approach. Prof. Westerhof was happy to share his thoughts on how to design new experiments and analyze data. Prof. Westerhof's integrity was undisputed, and he served as a scientific integrity counsellor at the VU University Medical Center from 2007 to 2014.

Prof. Westerhof's work on cardiac pump function and the circulation was ground-breaking and at the international forefront. He received international recognition, as illustrated by the many publications in renowned journals, and several awards. In 1996, Prof. Westerhof received an honorary doctorate from the Ecole Polytechnique Fédérale de Lausanne, Switzerland. He was also an honorary member of the Italian Society for Experimental Biology and member of the Turin Medical Academy of Sciences. In 2009, he was the recipient of the Oeuvre-prize, the Dusser de Barenne Coin, from the Dutch Physiological Society, and in 2011, Prof. Westerhof received the Lifetime Achievement Award of the ARTERY Society at a meeting in Paris. In 2014, he was appointed Knight in the Order of the Netherlands Lion.

In 1992, he co-founded the Cardiovascular Research Institute of the Free University Amsterdam. Under his leadership, the institute became a well-known center where clinicians and fundamental researchers team up and collaborate to establish bench-to-bedside research. Nowadays, this structure forms the basis of translational research at the Cardiovascular Research Institute at the Amsterdam University Medical Centers. He was president of the Cardiovascular System Dynamics Society from 1996 to 1998 and chairman of the Scientific Advisory Board of the Dutch Heart Foundation from 2003 to 2006.

We will remember Nico as a top scientist, a passionate science-loving person, who was a great lecturer, mentor and coach. I myself was fortunate to have Nico as my doctoral supervisor. He taught me that science has no borders and no hierarchy. His office door was always open. He showed that while being among one of the brightest people in the world, you can be modest and kind. Nico set the example of what scientific leadership should be.

By Jolanda van der Velden

Human models for studies on cardiovascular disease

By Jolanda van der Velden

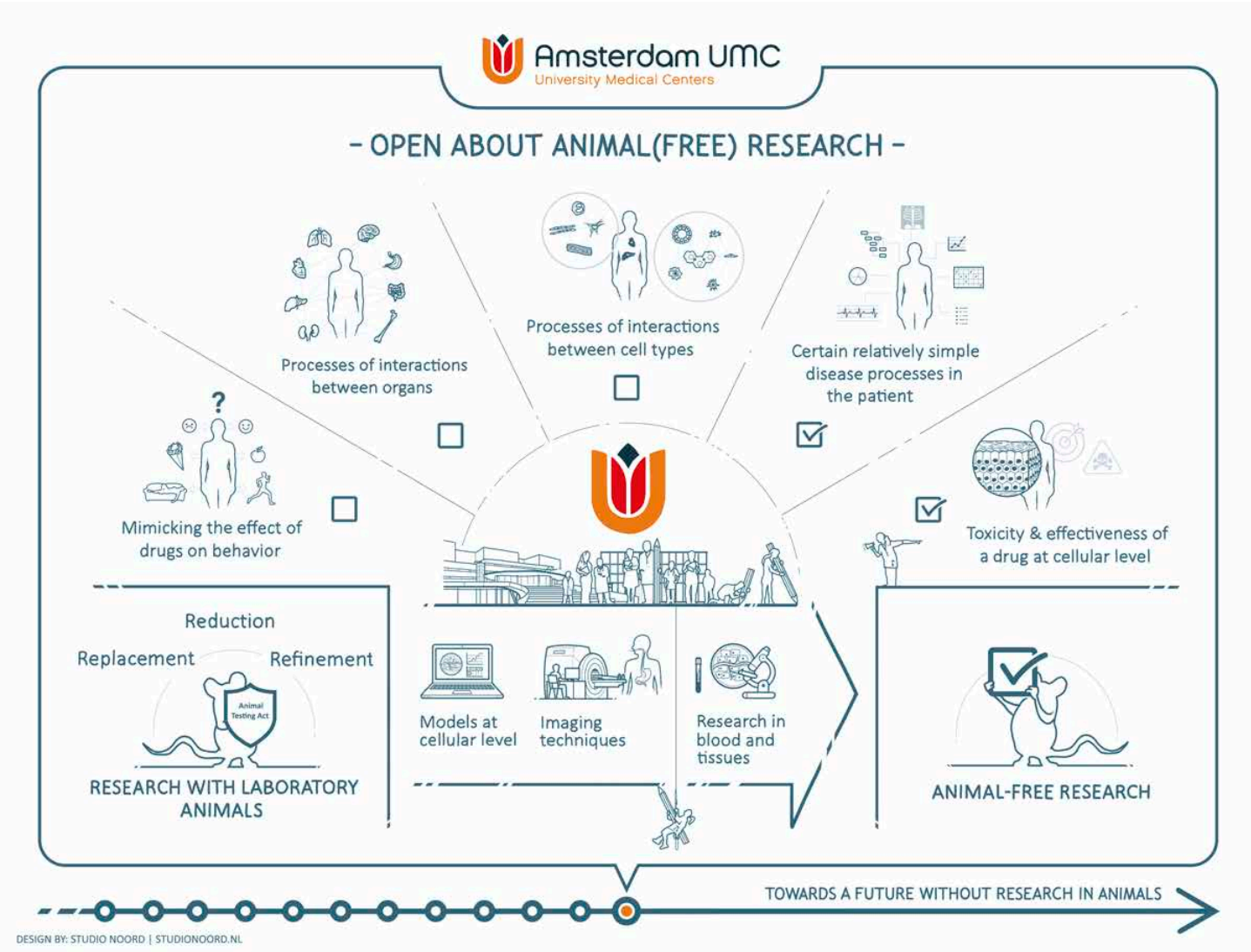
What is the best model for studying cardiovascular disease? There is no easy answer as the pathogenic triggers of both heart and vessel diseases are diverse and range from a gene mutation to diabetes, obesity and hypertension. Moreover, cardiovascular diseases mainly result from a combination of genetic and what are called 'secondary disease hits'. As a result of the complex nature of cardiovascular disease, it is not only challenging to prevent and treat but also to design experimental models that capture all the disease characteristics observed in humans.

In the past, scientists in the cardiovascular field put efforts into the development and optimization of experimental models for studying the diverse range of cardiovascular diseases [1]. These include animal models and clinical studies in humans using: population and patient data, imaging, and blood and tissue analyses.

Moreover, the discovery in 2006 that stem cells isolated from skin can be reprogrammed into any kind of cell type of the body, i.e., inducible pluripotent stem cells (iPSC) [2], has resulted in iPSC-derived cardiac and vascular single cell and whole tissue models. It is not only scientists who would like to optimize their models, in order to reduce or replace research that is currently performed on animals, but also society's desire for the reduction and even abolition of animal research models. The Netherlands aims to accelerate the transition to animal-free innovations and established Transition Animal Free Innovation (TPI, animalfreeinnovationtpi.nl) in 2018. While TPI is a laudable aim, and no one would argue against it, it is important to be realistic

References

1. *Van der Velden J et al. Animal models and animal-free innovations for cardiovascular research: current status and routes to be explored. Consensus document of the ESC working group on myocardial function and the ESC Working Group on Cellular Biology of the Heart. Cardiovasc Res. 2022.. doi: 10.1093/cvr/cvab370.*
2. *Takahashi K, Yamanaka S. Induction of pluripotent stem cells from mouse embryonic and adult fibroblast cultures by defined factors. Cell. 2006;126(4):663-76.*



about the pace at which scientists can make animal-free models that mimic humans, and are sufficient for testing newly developed interventions and drugs that can be entered in a clinical trial with humans without testing in an animal model. To support interactive discussions with society about research models and developments, Amsterdam UMC organized a symposium on the 8th of June 2022 where scientists discussed the current state in TPI with representatives of ZonMw, PETA and ProefDierVrij. On our new website (amsterdamumc.org/nl/proefdieren.htm), we communicate about our research on animals and animal-free innovations, and in the coming years will highlight successful translational research programs using both animal and animal-free innovations. Moreover, we will organize meetings with policy makers, funding agencies, foundations and patient organizations to keep the discussion going and to learn about each other's wishes and ideas. In this issue, we highlight animal research and animal-free innovations in ACS.

> **"AT AMSTERDAM UMC, WE AIM TO BE TRANSPARENT ABOUT RESEARCH PERFORMED ON ANIMALS, HUMANS AND ANIMAL-FREE MODELS, AND IMPORTANTLY, PROVIDE INFORMATION ABOUT THE PACE AT WHICH NEW, OPTIMIZED MODELS ARE MADE TO REFINE, REDUCE AND REPLACE RESEARCH ON ANIMALS"**

Valorization within ACS

Interview with Geert Boink, research group leader at the department of Medical Biology and translational cardiologist at Amsterdam UMC location AMC & Jan Willem Buikema, fellow translational cardiology at Amsterdam UMC location VUmc and department of Physiology.

Jan Willem Buikema & Geert Boink

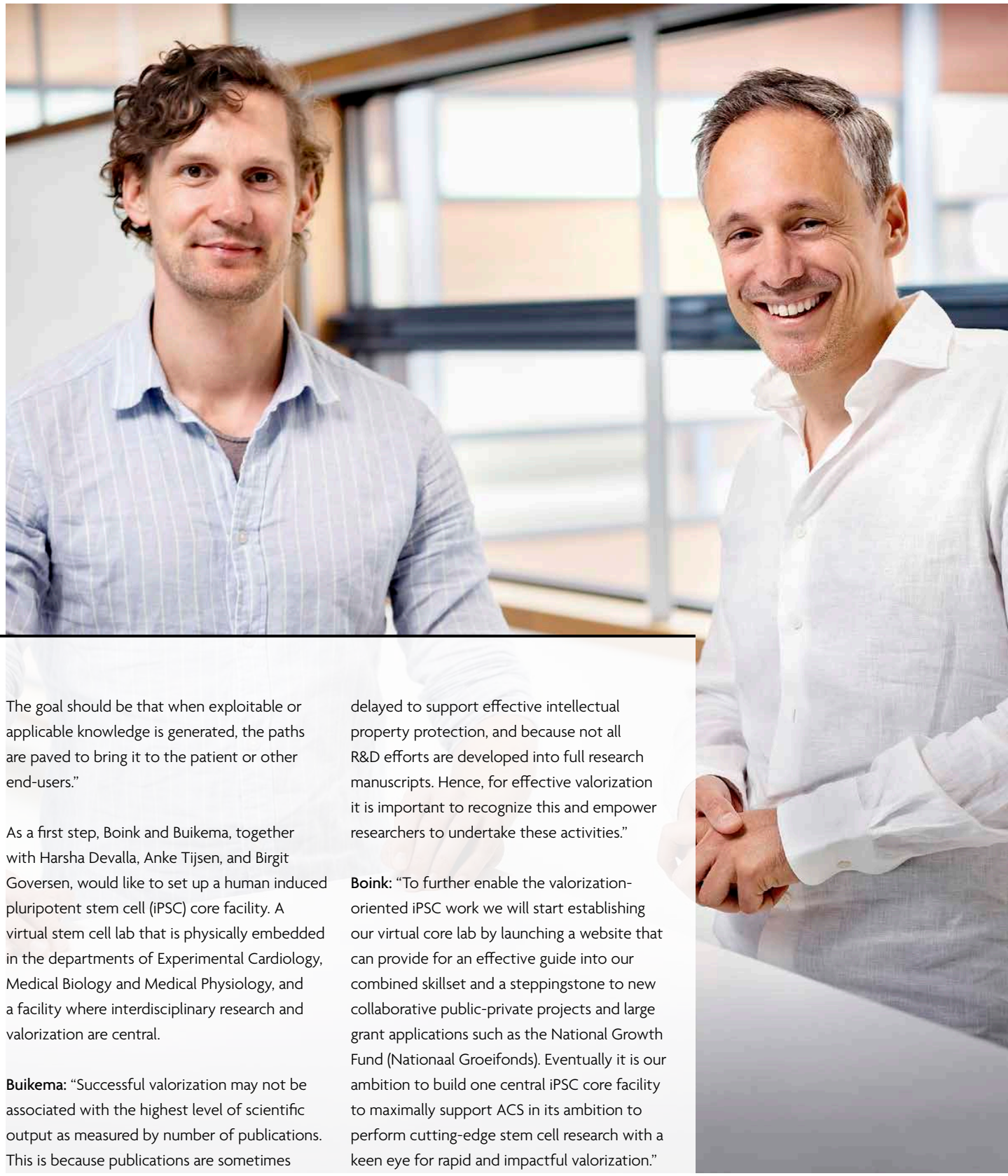
As a financier, the government makes demands on science and one of them is the transfer of knowledge for the benefit of society. In 2004, the then Minister of Education, Culture and Science, Maria van der Hoeven, made valorization one of the key points of science policy. NWO and KNAW have increasingly taken on the role of intermediaries between government as client and science as contractor. They translate government policy into the practice of science. As a researcher, you can no longer submit a proposal without the inclusion of a valorization strategy. As a result, research institutes are keen to showcase their valorization successes. To propel this field forward ACS decided to appoint a Valorization Officer. As of April 20th, 2022 Geert Boink, Research Group Leader at the department of Medical Biology and translational cardiologist at Amsterdam UMC location AMC works in this role two days a week for ACS. He works closely together with Jan Willem Buikema who as fellow of translational cardiology is bridging the gap from bench-side to bedside at Amsterdam UMC location VUmc and department of Physiology. Together Geert and Jan Willem explain what the ACS valorization goals are.

> **"VALORIZATION IS A CHAIN OF ACTIVITIES THAT YOU HAVE TO CONNECT WELL, FROM THE CLINIC TO THE LAB AND BACK AGAIN"**

Boink: "Valorization is a vague or unknown concept to many people. Researchers do engage in valorization, but often do not recognize or mention it. Valorization is therefore an interactive process that is often not developed in a linear fashion. It is economic and social, and you can tailor it to your own field."

Boink himself has had experience with valorization. Since November 2016, he has been involved in PacingCure B.V., an Academic Medical Center (AMC) spin-off biotech company that focuses on the development of clinically applicable biological pacemaker therapies and precision gene therapies for cardiac arrhythmias and cardiomyopathies.

Buikema: "The development trajectory of PacingCure clearly shows that you need each other within biotechnology. Valorization is a chain of activities that you have to connect well, from the clinic to the lab and back again.



The goal should be that when exploitable or applicable knowledge is generated, the paths are paved to bring it to the patient or other end-users."

As a first step, Boink and Buikema, together with Harsha Devalla, Anke Tijsen, and Birgit Goversen, would like to set up a human induced pluripotent stem cell (iPSC) core facility. A virtual stem cell lab that is physically embedded in the departments of Experimental Cardiology, Medical Biology and Medical Physiology, and a facility where interdisciplinary research and valorization are central.

Buikema: "Successful valorization may not be associated with the highest level of scientific output as measured by number of publications. This is because publications are sometimes delayed to support effective intellectual property protection, and because not all R&D efforts are developed into full research manuscripts. Hence, for effective valorization it is important to recognize this and empower researchers to undertake these activities."

Boink: "To further enable the valorization-oriented iPSC work we will start establishing our virtual core lab by launching a website that can provide for an effective guide into our combined skillset and a steppingstone to new collaborative public-private projects and large grant applications such as the National Growth Fund (Nationaal Groeifonds). Eventually it is our ambition to build one central iPSC core facility to maximally support ACS in its ambition to perform cutting-edge stem cell research with a keen eye for rapid and impactful valorization."

From lab to therapy

Interview with Prof. Yigal Pinto, professor of inherited heart muscle diseases, translational cardiologist and department head of Experimental Cardiology at Amsterdam UMC location AMC

Yigal Pinto, head of the Experimental Cardiology department at Amsterdam UMC, has had experience with valorization throughout his career. In 2004, his scientific work led to the discovery of galectin-3, a novel biomarker for heart failure. Galectin-3 eventually became the second biomarker approved by the FDA for heart failure in 2010. In recent years, his group has focused on RNA biology and uncovered a number of novel mechanisms involving microRNAs and circular RNAs.

Yigal Pinto and Prof. Eva van Rooij founded Phlox Therapeutics, a biotech spin-off of Amsterdam UMC. On June 8th 2022 they announced the closing of their seed investment round. Funding was provided by the FIRST fund and managed by BioGeneration Ventures (BGV). This pre-seed investment will be used to advance Phlox's lead program focused on rare genetic laminopathies.

What tips does Yigal Pinto have for researchers with the ambition to valorize their research?

Tip one:
"Everything starts with having the right starting point: what don't I understand yet? Biological knowledge is about first understanding what something is." For him, this intrinsic idea is central to carrying out scientific research. He refers to the book The Lives of a Cell by Lewis Thomas, who was a physician scientist, the president of Memorial Sloan-Kettering and a member of the National Academy of Science.

> **"VALORIZATION IS A PROCESS THAT WE DO TOGETHER AND IN WHICH THE ENTIRE STAKEHOLDER LANDSCAPE HAS TO BE INVOLVED"**
>
> *Yigal Pinto, head of the Experimental Cardiology department*

Pinto: "I was struck by his book in which he said we are mostly living in a halfway technology era of medicine." Lewis Thomas outlined three levels of health care technology. The first he called nontechnology: care that attends to ill patients but does little to alter the course of disease. Second were halfway technologies: those that do not eliminate diseases but do, at least, postpone their effects. In this largest group he put everything from solid organ transplantation to cardiac care units, which today we might call chronic disease management. Third was technology so transformative we often take it for granted, such as childhood vaccines to prevent diphtheria and antimicrobials to treat syphilis. He urged further investment in the basic sciences that support this third level of technology, arguing that the first two contributed greatly to the billions spent on health care and the third was "the only way to get the full mileage that biology owes to the science of medicine, even though it seems like asking for the moon."

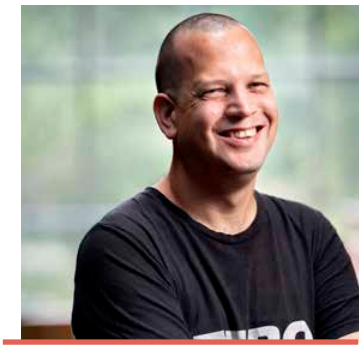
Tip two:
"Let the research grow and flourish through funding, e.g., ERS and biotechnology. Try to start a spin-off. IXA is very helpful, but it serves the whole hospital. For this reason, it is good that ACS has a permanent point of contact in Geert Boink, who has been appointed by ACS for two days a week as the Valorization Officer."

Tip three:
"Realize that the road is long. The time path from the first funding from ZonMw and the Dutch Heart Foundation takes three years, the step towards companies takes at least the same. In other words, you have to be in it for the long haul." The question of whether or not to commercially valorize is open to discussion.

Pinto: "Should the Netherlands innovate along strict ideological lines or do we use commercial businesses such as pharmaceutical companies?" According to him, it's a question of both commercial and non-commercial.
Pinto: "We will not get there on our own, valorization is a process that we do together and in which the entire stakeholder landscape has to be involved."

Personal grants

Alexander Vlaar
Intensive Care Medicine, Vidi 2020: *Transfusion-related acute lung injury - a breathtaking syndrome*



Koen Prange
Medical Biochemistry, Veni 2021: *Epigenetic control of inflammatory macrophage activation*

Stephan Huveneers
Medical Biochemistry, NHS Dekker Established Investigator 2021: *Aging of the vascular endothelium: how to keep stiff vessels healthy?*

Inge Mulder
Biomedical Engineering and Physics, NHS Dekker Postdoc 2021: *No Reflow in Ischemic Stroke (NORIS) Microvascular dysfunction in incomplete microvascular reperfusion: a mismatch between good recanalization and poor recovery in ischemic stroke*

Jeffrey Kroon
Experimental Vascular Medicine, NHS Dekker Senior Scientist 2021: *From glycolysis to beyond: endothelial metabolism as gate-keeper for inflammation in atherogenesis*

Pranav Bhagirath
Cardiology, Netherlands Heart Institute Fellowship 2021: *Non-invasive Assessment of Patient-specific Conduction Pathways and Associated Arrhythmic Vulnerability by Combining 3D Anatomical Substrate Characterization and Electrical Simulations*

KNAW Van Leersum grant 2021: *Prediction of Scar Related Sudden Cardiac Death by Combining Cardiac Magnetic Resonance Imaging and 3-D simulations*

Nordin Hanssen
Vascular Medicine, NHS Dekker Senior Clinical Scientist 2021: *Attenuating the inflammatory tone in (pre)diabetes to prevent cardiovascular disease – A story about bananas and bones?*

Jan Willem Buikema
Cardiology/Physiology, NHS Dekker Senior Clinical Scientist 2021: *Stem Cell Models for Tailoring Patient Specific Heart Failure Treatment (CRISTAL)*

Rik Olde Engberink
Internal Medicine - Nephrology, Dutch Kidney Foundation Junior Kolff 2021: *Skin sodium content in chronic kidney disease*

Daniël van Raalte
Internal Medicine, Dutch Diabetes Foundation Fellowship 2021: *The diabetic kidney in obesity has run out of oxygen: focus on sex differences*

Pieter Postema
Cardiology, NHS Dekker Senior Clinical Scientist 2021: *'STARNL'; StereoTactic Arrhythmia Radiotherapy in the NetherLands*

ACS symposia and events

Amsterdam Cardiovascular Sciences

Activities 2022

FEBRUARY 7
Microcirculation

MARCH 7
Atherosclerosis & Ischemic Syndromes

APRIL 4
Heart Failure & Arrhythmias

MAY 9
Pulmonary Hypertension & Thrombosis

JUNE 20
Diabetes & Metabolism

SEPTEMBER 5
Microcirculation

SEPTEMBER 20
7th Annual ACS conference

OCTOBER 3
Atherosclerosis & Ischemic Syndromes

NOVEMBER 14
Heart Failure & Arrhythmias

DECEMBER 12
Pulmonary Hypertension & Thrombosis

Activities 2023

FEBRUARY 6
Diabetes & Metabolism

MARCH 6
Microcirculation

APRIL 3
Atherosclerosis & Ischemic Syndromes

MAY 8
Heart Failure & Arrhythmias

JUNE 5
Pulmonary Hypertension & Thrombosis

JULY 3
Diabetes & Metabolism

UNTIL FURTHER NOTICE
8th Annual ACS conference

OCTOBER 2
Microcirculation

NOVEMBER 6
Atherosclerosis & Ischemic Syndromes

DECEMBER 4
Heart Failure & Arrhythmias

Rules of Affiliation

Scientific research at both sites of Amsterdam UMC is of high quality. In order to be scientifically recognized as Amsterdam UMC it is essential that the affiliation address is correct. This, of course, also applies to the universities UvA and VU.

The Board of Amsterdam UMC kindly requests to use the right affiliation addresses in the process of submitting/publishing your paper. Please not only add Amsterdam UMC, the University but also the research institute(s) and the research institute program(s) as affiliations in publications. Please note that it is allowed to have more than one affiliation with a research institute! Therefore, we request that you use the following address lines from now on:

For researchers affiliated with VU
Amsterdam UMC location Vrije Universiteit Amsterdam, Department(s), Boelelaan 1117, Amsterdam, The Netherlands;

Research institute: name research institute, program(s), Amsterdam, The Netherlands

Example: Prof. J. van der Velden [1, 2]
1: Amsterdam UMC location Vrije Universiteit Amsterdam, Physiology, De Boelelaan 1117, Amsterdam, Netherlands

2: Amsterdam Cardiovascular Sciences, Heart failure & arrhythmias, Amsterdam, The Netherlands

For researchers affiliated with UvA
Amsterdam UMC location University of Amsterdam, Department(s), Meibergdreef 9, Amsterdam, The Netherlands;

Research institute: name research institute, program(s), Amsterdam, The Netherlands

Example: Prof. T.G. van Leeuwen [1, 2, 3]
1: Amsterdam UMC location University of Amsterdam, Biomedical Engineering and Physics, Meibergdreef 9, Amsterdam, Netherlands

2: Amsterdam Cardiovascular Sciences, Heart failure & arrhythmias, Amsterdam, The Netherlands

3: Cancer Center Amsterdam, Imaging and Biomarkers, Amsterdam, The Netherlands

It is of great importance that, when publishing, all researchers use one of the affiliation addresses as shown above. This will guarantee that publications can continue to be attributed to the medical faculties of either VU or UvA, and moreover, that all publications can be read automatically in the output registration systems (PURE). This also ensures that unnecessary manual input or correction is kept to a minimum.

In the event that you are unable to fit all sections on the address line, priority must be given to the components Amsterdam UMC, location Vrije Universiteit Amsterdam, Amsterdam, The Netherlands or Amsterdam UMC, location University of Amsterdam, Amsterdam, The Netherlands.

The CONTRACT project:

the making of a model for myositis based on human disease

By Coen Ottenheijm and Joost Raaphorst

By combining expertise on muscle disease from both sides of the Amstel River and that of a Belgium based pharmaceutical company (Argenx), a unique consortium aims to develop an ex vivo model for myositis. The model will be based on human disease and may enable testing of highly needed novel compounds, in particular immunotherapies.

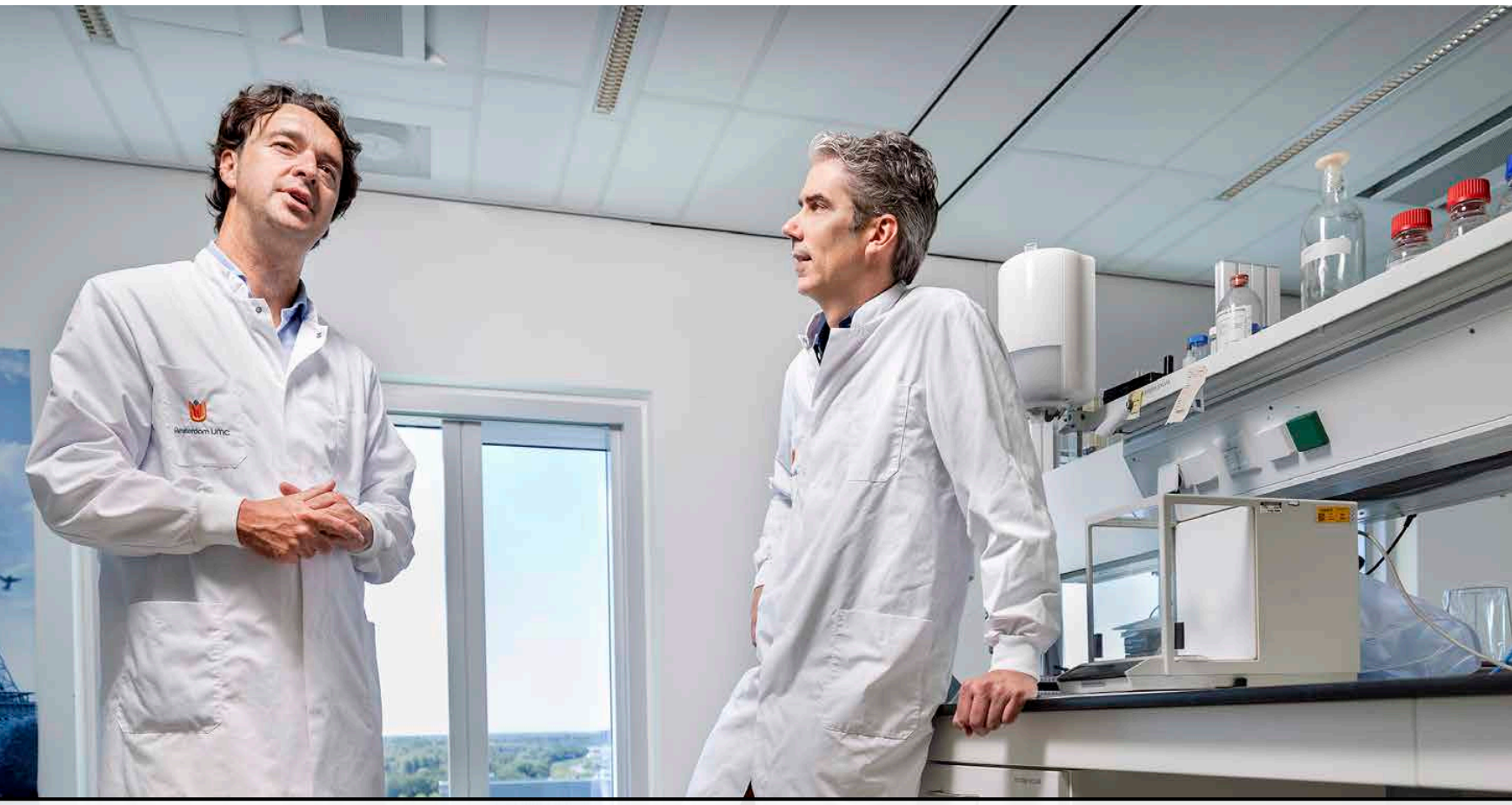
Joost Raaphorst & Coen Ottenheijm

Myositis is an autoimmune disease that leads to severe muscle weakness. Two thirds of the patients have a chronic disorder requiring ongoing immunosuppressant medication with suboptimal efficacy and considerable side effects. Although it is a rare disease, myositis affects around 250,000 people in Europe causing substantial burden of disease. The lungs and heart are affected in up to 50% of patients due to multi-organ inflammation. Amsterdam UMC, location AMC is a large national referral center for patients with myositis.

Twelve myositis-specific autoantibodies (MSAs) have been discovered. MSAs shed light on different pathomechanisms and provide the opportunity to develop specific therapies. A better understanding of the pathophysiology underlying muscle weakness is key to identifying contributors that could be targeted to prevent or revert this defect at an early stage. Myositis-specific autoantibodies and the complement system cause direct muscle damage, which is visible in routine muscle biopsies.

> **"THE NEED FOR TARGETED IMMUNOTHERAPIES FOR MYOSITIS TO INCREASE MUSCLE STRENGTH AND QUALITY OF LIFE IS FELT BY PATIENTS AND THEIR PHYSICIANS"**

We recently measured contractility of individual muscle fibers of five patients with the most severe subtype of myositis in terms of muscle weakness, i.e., immune-mediated necrotizing myopathy (IMNM). We have convincingly shown impairment of muscle fiber contraction, in all



these patients. The muscle biopsies were from patients with SRP-antibodies, which in turn have been shown by others to be pathogenic in vitro (reduction of the size of myotubes) and in vivo, resulting in lower muscle strength in mice. The cause of the reduced muscle strength related to the antibodies is unknown, but an important role of complement and contractility are now likely.

The consortium aims to elucidate the connections between defects of the immune system and muscle dysfunction. This will be done by combining: the clinical expertise of Joost Raaphorst and Anneke van der Kooi; the use of a large databank of muscle biopsies and antibodies of Eleonora Aronica; the unique knowledge base of muscle physiology in the laboratory of Coen Ottenheijm at location VUmc and by using new compounds which are provided by Argenx.

Sophisticated measurements of muscle fiber contractility of human samples are done in Ottenheijm's laboratory. These contributed to the conception of this project. However, it is a time-consuming method (~10 fibers a day). A new setup, using technology from Cytocypher is paving the way for investigating the effect of human myositis antibodies in a murine model. The innovative setup is the first high-throughput screening of muscle fiber contractility in myopathies. The throughput of functional measurements, using isolated individual murine flexor digitorum brevis fibers (FBD) is increased by a factor 100. It allows for: very rapid fiber finding, fiber positioning, measurement of dynamic calcium and contractile function, fully automated data collection and throughput of 500-1000 fibers per day. Furthermore, it allows us to test whether autoantibodies impair contractile function and calcium cycling ex vivo. If successful this will generate a unique readout for testing the effect of new compounds and the role of complement.

Raaphorst and Ottenheijm's project is a public private partnership funded by an Amsterdam UMC TKI-grant (sponsored by the Dutch Ministry of Economic Affairs, through the Rijksdienst voor Ondernemend Nederland and Topsector Life Sciences & Health). They hope the project will generate unique insights into the interplay between the immune system and muscle fiber contractility. Proof-of-concept of a negative impact of MSAs and complement on muscle contractility will empower first-in-human studies of tailored immunotherapy not only for myositis patients but also for patients with other immune mediated conditions involving muscle weakness, e.g., ICU-acquired weakness, vasculitis, et cetera.

The CIRCULAR consortium:

implement citizen science to co-create animal-free solutions of atrial fibrillation

By Bianca Brundel

ACS professor Bianca Brundel received 4.6 million euros from the NWA-ORC (NWO) for the CIRCULAR consortium to study triggers and suppressors of atrial fibrillation (AF). The project is unique as people with lived experience of AF play a central role via citizen science in the Atrial Fibrillation Innovation Platform (AFIP), a foundation co-founded by Bianca Brundel and Natasja de Groot (Erasmus MC). Furthermore, only animal-free advanced model systems and human biobanking are utilized to translate the findings from the bench to the clinic.

The most common cardiac arrhythmia is AF. It is difficult to diagnose and treat, due to the lack of knowledge of the molecular root causes driving AF. Current AF treatments are based on a 'one-size-fits all' approach and do not prevent progression from recurrent intermittent episodes to permanent AF. Adding to these difficulties, it is challenging to determine the stage of AF. Therefore, AF progresses over time causing a tremendous physical, psychological, societal and economic burden.

CIRCULAR: holistic approaches for AF management

AF is mainly found in older individuals (>70 years of age) and those with Western dietary and lifestyle-related conditions such as high blood pressure, diabetes mellitus and obesity. In addition to 'wear-and-tear', AF can also be caused by congenital heart diseases and genetic variations. Molecular mechanisms driving AF are studied by Brundel's group, and aid in explaining the electrical arrhythmic changes in AF. They have identified that bio-electrical dysfunction drives AF, i.e., atrial tissue damage-induced electrical and contractile dysfunction. This research led to the discovery of blood-based biomarkers, advancing the diagnosis of AF. Moreover, these molecular mechanisms fueled the identification of novel druggable targets, which have been successfully tested in several AF models. Drugs used in these new treatment approaches are already on the market for other indications, making clinical trials within reach. Furthermore, in co-creation with AFIP some of these drugs have already been tested on patients.

By utilizing citizen science, patients have already identified five leading triggers for AF. Together with patients, researchers and health professionals, the CIRCULAR consortium aims to further explore these triggers. Moreover, experimental research is directed at building the bio-electrical human AF atlas that serves new high-throughput drug discovery and biomarker research. By co-creation with patients, novel treatments are tested in clinical trials. This concept is innovative, as it translates citizen science to vertebrate animal-free model testing and clinical trials for patient-tailored solutions. This circular and holistic AF management concept recently received attention in the Nature Reviews Disease Primer on 'Atrial Fibrillation' (PMID: 35393446).

CIRCULAR consortium

The ambition of the CIRCULAR consortium is to reduce the AF burden by testing how toxic-triggers for AF result in molecular and electrical

dysfunction and drive AF. This will be tested in co-creation with people with lived experience of AF and innovative animal-free technologies. The findings will be utilized to discover effective treatments and diagnostics. The AFIP foundation serves to co-create science and solutions with people with lived experience of AF, researchers, and health professionals.

In the CIRCULAR consortium, public as well as private partners are working together. The grant that funded the CIRCULAR consortium, Dutch Research Agenda Program Research along Routes by Consortia (NWA-ORC), is specifically meant to stimulate public-private partnerships and interdisciplinary research. The NWA-ORC awarded a total of 149 million euros, 131 million euros of which was contributed by NWO and 18 million euros by local and international consortium partners.

“BY COMMUNICATING WITH PEOPLE WITH LIVED EXPERIENCE OF AF, HEALTHCARE PROFESSIONALS AND SCIENTISTS, WE CREATE SYNERGY AND EMPOWER ALL STAKEHOLDERS TO WORK ON HOLISTIC APPROACHES FOR AF MANAGEMENT”

André Heuvelman (co-founder RE:SET, trumpet player & producer), Frans de Rond (co-founder RE:SET, radio technician) & Bianca Brundel.

Meet our new professors

Petra Elders
Diabetes and home

Stan van de Graaf
Incentives and signals

Bert-Jan van den Born
About the differences between people

Liffert Vogt
About kidneys and the battle with the elements

Alexander Vlaar
Blood sweat and tears

Pieter Willem Kamphuisen
Tailor-made prevention

Numbers and Facts

ACS events organized in the last 6 months of 2021 and first 6 months of 2022:

2 annual meetings

7th Annual ACS Conference and 12th Rembrandt Symposium

1 Postdoc Retreat

1 PhD Afternoon

10 Monthly symposia

1 PhD Retreat

ACS grants awarded in 2022:

1 nursing research grant

ACS Nursing Research grant of €12,500

4 postdoc grants

ACS Postdoc grants of €70,000

5 equipment grants

ACS Equipment grants of €25,000

ACS publications in the last 6 months of 2021 and first 6 months of 2022:

10 ACS thesis defenses letters

1 ACS glossy

20 ACS newsletters

ACS members in 2022:

415 PhD students

73 Postdocs

26 Specialists in training

164 Principal Investigators

83 Staff members

icons by Berkah Icon, from thenounproject.com

Care evaluation & appropriate use:

the CLEAR-CAD Trial

By José Simao Henriques and Nils Planken

The Dutch national health care costs for coronary artery disease (CAD) amounted 2.4 billion euros in 2015 and are expected to increase to 4.2 billion euros in 2030 [1]. Currently, the usual diagnostic strategy includes a variety of invasive and non-invasive tests that are being used interchangeably at the discretion of the treating cardiologist. Despite these tests, many patients with chest pain due to CAD are misdiagnosed with non-cardiac chest pain and account for one third of patients who subsequently endure a myocardial infarction [2].

José Simao Henriques & Nils Planken

Recent single-approach trials have demonstrated the potential of a uniform diagnostic and treatment scheme that is likely to improve efficacy as well as lower costs. In the SCOT-HEART trial, the use of Computed Tomography Coronary Angiography (CTCA) as additional diagnostic test increased the frequency and certainty of CAD diagnosis due to the improved detection of both non-obstructive and obstructive CAD. The subsequent targeted treatment with preventive pharmacotherapy resulted in a significant reduction of myocardial infarctions at 5-year follow up [3, 4]. At the same time the ISCHEMIA trial has shown that optimal medical therapy (OMT) in patients with obstructive CAD and proven ischemia was non-inferior to an early invasive revascularization strategy [5].
Based on these trials, we hypothesize that a diagnostic strategy consisting of CTCA to detect CAD and initiate OMT, with angiography and revascularization only in patients with refractory angina and proven ischemia by functional imaging, will result in superior clinical outcomes and reduced health care costs. We will investigate this hypothesis in the CLEAR-CAD trial.

The CLEAR-CAD trial is a randomized clinical multicenter trial in the Netherlands in patients with suspected CAD, comparing usual care with a staged, uniform diagnostic and treatment strategy guided by upfront CTCA. In the intervention arm, based on CTCA, patients are categorized into three groups: (1) no CAD: these patients will not be treated and can be reassured, (2) non-obstructive CAD: these patients will be treated with preventive OMT, and (3) obstructive CAD: these patients will be treated with preventive OMT and, if chest pain persists, they will undergo additional diagnostic testing for ischemia detection. Furthermore, if in these latter patients substantial myocardial ischemia on non-invasive functional imaging is detected, then they will undergo invasive coronary angiography with a direct option for revascularization. In the control arm, usual care will be according to the treating physicians,

currently characterized by a diversity of invasive and non-invasive diagnostics.

The trial is designed to demonstrate superiority regarding clinical outcomes at 3-year follow-up, and superiority regarding cost-effectiveness. Secondary outcomes will include anginal complaints. In order to demonstrate superiority regarding clinical outcomes, around 6,500 patients will be included.

CLEAR-CAD is designed by a collaboration of experts and members of the Dutch Societies of Cardiology, Radiology, Nuclear Medicine and Thoracic Surgery. This project is funded by *ZonMw* under the auspice of the national Health care and Appropriate care (ZE&GG) program and *Zorgverzekeraars Nederland*.

ZE&GG is a collaborative health care program of the *Federatie Medisch Specialisten, Verpleegkundigen & Verzorgenden Nederland, Zorgverzekeraars Nederland, Nederlandse Federatie van UMCs, Nederlandse Vereniging van Ziekenhuizen, Zelfstandige Klinieken Nederland, Patiëntenfederatie Nederland* and the Ministry of Health [6]. It will be one of the largest trials on the diagnostic and treatment pathway in suspected CAD. We expect the results to drive the recommended care for CAD, and to be able to start patient inclusion in 2022.

References

1. *Nederland Z. Verbetersignalement Pijn op de borst (verdenking) stabiele angina pectoris. 2017; (December).*
2. *Sekhri N, et al. How effective are rapid access chest pain clinics? Prognosis of incident angina and non-cardiac chest pain in 8762 consecutive patients. Heart. 2007. doi:10.1136/hrt.2006.090894*
3. *Newby D, et al. CT coronary angiography in patients with suspected angina due to coronary heart disease (SCOT-HEART): An open-label, parallel-group, multicentre trial. Lancet. 2015;385(9985):2383-2391.*
4. *Investigators TS-H. Coronary CT Angiography and 5-Year Risk of Myocardial Infarction. NEJMoa1805971. 2018:NEJMoa1805971.*
5. *Spertus JA, et al. Health-Status Outcomes with Invasive or Conservative Care in Coronary Disease. N Engl J Med.*
6. *zorgevaluatiegepastgebruik.nl*

Burning fat sustains a healthy heart

By Riekelt Houtkooper and Signe Mosegaard Nielsen

Riekelt Houtkooper & Signe Mosegaard Nielsen

> **DETECTING THE DISEASE MECHANISMS IN VLCADD, WILL NOT ONLY HELP US UNDERSTAND VLCADD, BUT ALSO ALLOW FOR THE TESTING OF NEW TREATMENT OPTIONS AND PROVIDE A BETTER UNDERSTANDING OF HOW FAT PLAYS AN IMPORTANT ROLE IN CARDIAC FUNCTION"**

What is VLCADD?

Very long-chain acyl-CoA dehydrogenase deficiency (VLCADD) is rare inherited metabolic disease that occurs in ff1:50,000 newborns. Patients can present with hypoketotic hypoglycemia, cardiomyopathy, arrhythmias, and rhabdomyolysis. VLCADD is caused by mutations in the ACADVL gene that produces a dysfunctional very long-chain acyl-CoA dehydrogenase enzyme leading to defective breakdown of long-chain fatty acids.

Fatty acids in the cardiac and muscle metabolism

Long-chain fatty acids are a stable and rich source of energy. Therefore, tissue such as the heart, skeletal muscle and the liver rely on energy derived from fatty acids, especially when the supply of carbohydrates is low, like when exercising or during an infection. In VLCADD patients, the energy production from fatty acids is compromised, as a result patients experience heart failure, arrhythmias, skeletal muscle pain and weakness. Early diagnosis can prevent fatal outcomes in some patients and this is why VLCADD is included in newborn screening programs all over the world, including the Netherlands. Thus, identifying patients in the first weeks of life. Nevertheless, patients can still develop long-term cardiac and skeletal muscle complications. Therefore, it is crucial to better understand the disease mechanisms and triggers, and to work towards effective therapies.

Disease models and mechanisms

To investigate disease mechanisms, we need access to patient tissues and good disease models. However, access to patient material is limited and the mouse models do not develop the severe disease we see in humans. Therefore, we have invested in better models to investigate VLCADD and to develop better treatments for the patients. With the group of Prof. Connie Bezzina we investigated at a single-cell resolution the driving factors for arrhythmia phenotypes in patient-derived iPS-cardiomyocytes. With Prof. Jolanda van der Velden we are currently aiming to develop 2D and 3D iPS-derived cardiac and muscle cell culture models to further delineate the disease mechanisms of VLCADD and to test emerging therapies, such as ketone bodies. Detecting the disease mechanisms in VLCADD will not only help us understand VLCADD but also allow for the testing of new treatment options and provide a better understanding of how fat plays an important role in cardiac function.

Skin salt sequestration and the impact for kidney and heart health

By Liffert Vogt and Rik Olde Engberink

Liffert Vogt &
Rik Olde Engberink

Over the past ten years, carefully conducted balance and MR imaging studies have revealed that patients who suffer from high blood pressure, heart disease, diabetes mellitus and kidney disease have one feature in common. These cardiovascular risk patients accumulate high amounts of sodium under their skin without proportional water retention, leading to a hyperosmolar environment in this tissue. However, the biology of this recently uncovered phenomenon remains highly enigmatic. On the one hand, temporary storage of an excess of sodium in tissues seems beneficial as it neutralizes immediate fluid expansion and blood pressure increments of an unhealthy dietary salt load. On the other hand, high skin sodium content has been related to negative effects such as loss of integrity of the smallest blood vessels,

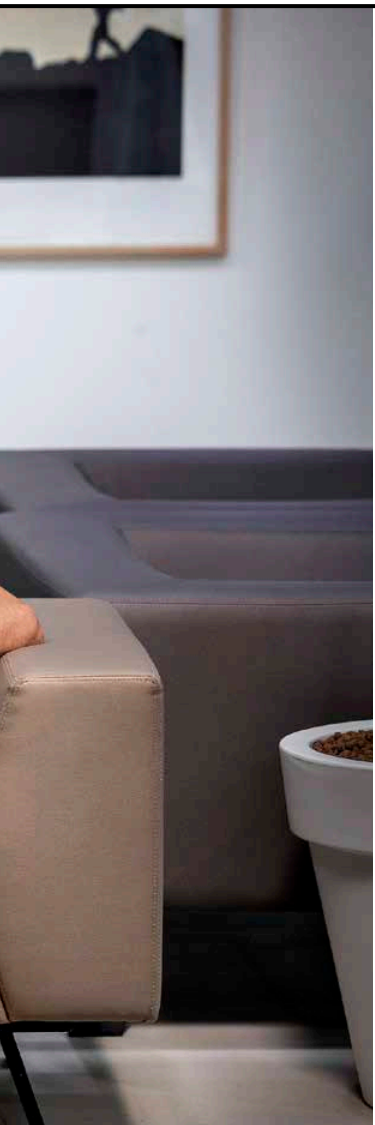
activation of circulating inflammatory cells in the blood stream and increased migration of these cells into the tissues.

For some years, the ACS scientists, Prof. Liffert Vogt and Dr. Rik Olde Engberink, have been trying to grasp the mechanisms leading to sodium sequestration. With funding from the Dutch Kidney Foundation's Kolff program and the Dutch Heart Foundation's Dekker program, their team is now studying how: skin salt can be affected by diet (e.g. salt consumption) and blood pressure medication; why it is increased in cardiovascular risk patients and animal models for heart disease and whether skin salt removal translates into better kidney and heart health.

Thanks to two ACS equipment grants, the content of various alkali ions, including sodium, potassium and lithium, can be measured with high resolution in destructed tissues (in vivo and ex vivo). In addition, the purchase of a specially built coil allows for non-invasive imaging of sodium by MRI in various diseases characterized by disturbed sodium homeostasis. Over the next few years, Vogt and Olde Engberink will test promising therapies that interfere with sodium sequestration and that might reduce the burden of kidney and heart disease.

Donidalorsen for the prevention of hereditary angioedema attacks

By Lauré Fijen



Foreground: Lauré Fijen (MD-PhD Vascular Medicine), Nanet Sons & Hans Kelder Background: Marianne Cammenga & Liesbeth van Huizen

Amsterdam UMC is an international referral center for hereditary angioedema, a rare disorder that occurs in 1 in 50,000 to 100,000 people. Patients with this disease experience recurring swellings which can be extremely painful, disabling and even fatal. The majority of hereditary angioedema cases are caused by a deficiency of the protein C1-esterase inhibitor. This results in blood vessel leakages, leading to localized fluid accumulation in the skin, gut or airways. In the Netherlands, three therapies are available to prevent the occurrence of these angioedema attacks. However, these therapies have various shortcomings, including frequent intravenous administrations, painful injections and serious side effects. Even though the current therapies can reduce the attack rate, many patients still experience breakthrough attacks.

In recent years, Dr. Danny Cohn, an internist and vascular medicine specialist, and PhD student Lauré Fijen have been working on innovative approaches to prevent these angioedema attacks. One of these approaches is to suppress the production of the protein prekallikrein by using an innovative method called oligonucleotide antisense therapy. In the absence of sufficient C1-esterase inhibitor in hereditary angioedema patients, cleavage of prekallikrein is enhanced, which leads to the notorious swellings. Blocking the production of prekallikrein with the drug donidalorsen resulted in a 97% decrease in the number of angioedema attacks in a double-blind, placebo-controlled phase 2 trial in 20 patients with severe hereditary angioedema. This study was published in the New England Journal of Medicine (NEJM) in March 2022, following an initial publication of the phase 1 trial and pilot study with 2 patients in the NEJM in September 2020.

> **"THE ANGIOEDEMA ATTACK RATE IN THE GROUP THAT RECEIVED DONIDALORSEN DECREASED BY 97% IN A PHASE 2 TRIAL"**

Cohn and Fijen co-designed these studies and are very pleased with not only the good efficacy of the monthly subcutaneous donidalorsen injections, but that no serious side effects occurred and the patients' quality of life improved dramatically. Immediately after finishing this phase 2 trial, all participants, including the patients initially randomized to placebo, could enroll in an open-label extension study in which everyone receives donidalorsen. This trial is being conducted at the Clinical Trial Unit of the Department of Vascular Medicine. Currently, the hereditary angioedema team is planning to start participating in the international phase 3 study with donidalorsen this summer.

Amsterdam UMC Doctoral School:

A centralized services for all Amsterdam UMC PhD candidates

By Janine Stolwijk

The Amsterdam UMC Doctoral School is the first contact point for all PhD candidates and supervisors at Amsterdam UMC. We are responsible for providing useful, concrete, and centralized information. In addition, we offer a broad range of courses, specifically tailored to facilitate development both at the scientific and personal level. These courses are centrally funded and therefore free of charge for our registered PhD candidates. If PhD candidates face any issues during their trajectory, they can contact our PhD Advisors for coaching and advice. Besides this, the offices of doctorate affairs of AMC/UvA and VUmc/VU are there to support the administrative processes and formalities around the PhD defense.

Janine Stolwijk, director Amsterdam UMC Doctoral School

By harmonizing the services for PhD candidates at Amsterdam UMC we have become the first institute to support PhD trajectories of the two different faculties of Medicine in Amsterdam. We think a PhD trajectory is more than submitting a thesis and discussing it during the public defense. It's also a training and development program, on both a scientific and personal level, in order to become a well-rounded researcher. The education of these young professionals is a shared responsibility of the supervisory team, the research institutes and the Doctoral School. Collaboration is therefore the key. Within this collaboration, the Doctoral School is focused on supporting the PhD trajectory from a general and centralized point of view, while learning specific skills in the research area are facilitated by the supervisory team, together with the department and the research institutes. By working closely together, we are working towards a new generation of great research professionals.

> **"THE AMSTERDAM UMC DOCTORAL SCHOOL IS THERE TO SUPPORT THE PHD JOURNEY"**

My personal focus is on creating more visibility for the Doctoral School and the services we offer. We are there to support the Amsterdam UMC PhD journey. With this focus in mind, we do our best to reach out to all the important players involved in a PhD trajectory and strive to be a prominent and appreciated partner. By streamlining our processes, we can make each other stronger and enhance the PhD system. Do you have any suggestions or ideas for us? I'm more than happy to meet with you.

Treatment of acute ischemic stroke

Targeting the smallest vessels

By Inge Mulder

For several years, specialists have been able to remove the clot from a brain vessel via a catheter after ischemic stroke, a thrombectomy. This procedure has resulted in a significant breakthrough in the treatment of people who have suffered a major stroke.

However, many patients still have an unfavorable outcome. This is probably due to various causes ranging from failure to remove or partially remove the clot, to insufficient flow in the smallest brain vessels (capillaries), to edema formation and inflammation. Part of the problem is, that despite a successful reopening of the larger occluded vessel (recanalization), there is still incomplete reperfusion of the smaller downstream vessels. To solve this problem, in-depth basic knowledge on vascular behavior during and after vessel occlusion is needed to increase treatment efficacy.

> **"IMPROVING A PATIENT'S QUALITY OF LIFE STARTS WITH A STRONG MULTIDISCIPLINARY TEAM OF CURIOUS AND MOTIVATED RESEARCHERS"**

Pre-clinical stroke research group

Amsterdam UMC is one of the largest stroke-hospitals in the Netherlands, allowing for major advances in clinical treatment over the years. To broaden this impact, I joined the AMC to build a translational stroke-team comprised of different specialists, where we combine clinical and pre-clinical knowledge and research. At the moment, we have a solid pre-clinical stroke research group consisting of several PhD students, working in a multi-modal pre-clinical imaging center this is a joint effort within the Biomedical Engineering and Physics department. The ACS Equipment grant 2021, Amsterdam Neuroscience and the Netherlands Heart Foundation Postdoc Dekker grant 2021, have been instrumental in enabling this.

State-of-the-art imaging technique to unravel the microvascular signature in stroke

Inge Mulder: With my research, I focus on the behavior of the cerebral micro-vasculature in stroke due to large vessel occlusion, after recanalization, as well as on micro-infarcts and silent infarcts. In these disease models, I investigate micro-vascular behavior (e.g. dysfunction of the smaller arteries, constriction of pericytes and blood-brain-barrier disruption) and the role of micro-thrombi on outcome. For this, we use the latest in vivo multi-photon microscopy imaging technique. This allows us to study the vasculature and specific targeted brain cells at the moment a large or small vessel occlusion or recanalization occurs, and to assess the effect of different treatment options. We have the unique opportunity to see, in real time, how different vessels and individual cells react to vascular occlusion and reperfusion. My aim is to unravel the mechanisms occurring in the brain during infarct development and treatment effect, in order to find new therapeutic targets to increase the efficacy of available treatments.

Yan Wang, Davide Vacondio, Marc Franssen, Moeed Khokhar, Kevin Mol & Inge Mulder (Postdoctoral Researcher Dept. Biomedical Engineering & Physics)


Mededelingen
SPECTRA PHYSICS LASERS
SANTA CLARA, CA. 95054
MADE IN USA
P/N 90044050

CURIUS:

the new research platform for all Heart Center research and innovation

By Iris Vegting

Back in June 2021, when the Heart Centers of AMC and VUmc joined the merger of Amsterdam UMC, a focus group was formed called the CardiovascUlaR Innovation and research campUs amSterdam (CURIUS). The goal was to create a platform for centralizing research within Amsterdam UMC, across what has become the biggest heart center of the Netherlands. As part of this platform, a CURIUS Clinical Trial Unit was created to facilitate and stimulate all clinical Heart Center research, including the fields of clinical cardiology, cardiothoracic surgery, physiology and experimental cardiology.

This newly created CURIUS Clinical Trial Unit is comprised of a team of skilled research coordinators and nurses, experienced in all areas of cardiology. They work alongside other professionals including a business developer, a data scientist, and a statistical expert. Together, they enable principal investigators to conduct innovative research and develop cutting-edge technology across the field. Eventually, CURIUS aims to become the largest cardiology research platform across Europe.

Even though some parts of the CURIUS research platform are still under development, most plans have already been implemented. For example, an online platform was created where study information for all current and upcoming research trials are centrally available for Amsterdam UMC Heart Center employees. At the same time, the CURIUS Clinical Trials App was developed, making all this information easily accessible on any smartphone. This greatly improves knowledge of ongoing trials and encourages the inclusion of new research patients.

The main goal of CURIUS is to stimulate and facilitate new research projects, initiated by Amsterdam UMC researchers. The CURIUS platform can be accessed at CURIUS@amsterdamumc.nl for questions, suggestions for collaborations and for discussions of novel research ideas.

The new CURIUS research platform of the Amsterdam UMC Heart Center will become a reality in the fall of 2022. From then on, CURIUS will centralize and facilitate all cardiology research within its CURIUS Clinical Trial Unit. A new era of innovation, valorization and talent development awaits.

Iris Vegting,
Clinical Trial Manager CURIUS

> THE NEW RESEARCH PLATFORM CURIUS, THE CARDIOVASCULAR INNOVATION AND RESEARCH CAMPUS AMSTERDAM, AIMS TO BE THE BIGGEST CARDIOLOGY RESEARCH PLATFORM ACROSS EUROPE”

The next generation of cardiovascular researchers

By Warner Simonides and Vincent Christoffels

September 2022 will see the start of a new addition to the Biomedical Master program of the UvA: the Cardiovascular Sciences track. This international two-year master program is taught at Amsterdam UMC, location AMC and aims to provide students with the knowledge, skills and network needed for a career in cardiovascular research.

This dedicated track is unique in the Netherlands and designed around the range of themes studied by the research groups of the ACS. To a large extent, it is a continuation of the successful VU Cardiovascular Research Master in which ACS researchers, from both sides of the Amstel, have been participating. The initiative to transfer this curriculum was prompted by the ongoing lateralization process which will result in almost all departments of the ACS being located at location AMC. This concentration of research labs, clinical departments and the associated activities, such as research meetings and symposia, will provide the best possible environment for our master students.

Vincent Christoffels (head of the Medical Biology department, location AMC) and Warner Simonides (Physiology department, location VUmc, and former director of the Cardiovascular Research Master) coordinate the track and are responsible for the program.

Warner Simonides, Ass. Professor Physiology & Vincent Christoffels, Full Professor Development Biology

> **THIS DEDICATED TRACK IS UNIQUE IN THE NETHERLANDS AND DESIGNED AROUND THE RANGE OF THEMES STUDIED BY THE ACS RESEARCH GROUPS"**

In the first semester, following a general Cell Biology course at Science Park, the track-specific program is composed of two four-week courses, Heart development function & disease and Vascular development function & disease. Each week covers a specific set of topics introduced by one of two senior ACS experts who are responsible for the content and presenters of their week. State-of-the-art lectures by these basic and clinical researchers will provide the context for the subsequent lectures focusing on the fundamental biological and biophysical aspects of cardiovascular physiology and pathophysiology, as well as the various analytical techniques used in research. Visits to labs or clinics, practicals and assignments are an integral part of each week. In this first semester of the track the 25 students will meet over 50 ACS researchers and will be able to build a network that will allow them to find their internships within ACS and abroad in the subsequent semesters of the master program.

We believe this new track will contribute to the next generation of scientists who will advance our knowledge of the cardiovascular system and its disorders.

ACS Nursing grants

By Marja Holierook and Stefanie van Oostrum

The ACS Nursing Research grant was introduced in 2021 and is aimed at Amsterdam UMC nurses with a Master's degree, who are interested in following a PhD trajectory in the cardiovascular field in combination with clinical duties as a nurse. This grant is under a scientific academic development support program for nurses.

Marja Holierook and Stefanie van Oostrum were awarded the ACS Nursing Research grant of €12,500. Both received a day and half a week protected research time for one year for a preparatory Nursing Research project.

Marja Holierook (Nurse Specialist Cardiology, Clinical Epidemiologist) started the 1st of August 2021 with her preparatory Nursing Research project called: Is Edmonton Frailty Scale assessment before Transcatheter Aortic Valve Implantation (TAVI) a good predictor of negative outcomes? TAVI is a widespread and increasingly common treatment for mostly older patients with severe aortic valve stenosis. Assessment of frailty-status is essential as higher frailty is associated with increased risk of morbidity, and mortality in this population. However, there is no consensus on how to define frailty. In order to fulfill this need, we explored the scores on the Edmonton Frail Scale, which is currently used in our outpatient clinic. This was done to: a) predict length of hospital stays, b) determine short-term and long-term mortality and c) assess adverse outcomes after TAVI.

Stefanie van Oostrum (senior nurse cardiothoracic surgery, clinical epidemiologist) is conducting a preparatory Nursing Research project called: Pre-operative Nurse Assessment in Cardiothoracic Surgical Patients: a process evaluation of a complex intervention. Previous research has shown that counseling and screening of patients prior to a Coronary Artery Bypass Grafting (CABG) promotes recovery, increases patient satisfaction and reduces post-operative complications. For two years now, patients in Amsterdam University Medical Centers have been informed and screened by a nurse during the pre-operative nurse assessment with the aim of reducing the post-operative risk in various health aspects.

This project, which started the 1st of September 2021, evaluates the performance and implementation of the pre-operative nurse assessment protocol and the effects of the intervention on postoperative complications.

Marja Holierook & Stefanie van Oostrum

ACS Awards 2022

ACS awarded: Postdoc grants (€70,000), Nursing Research grant (€12,500) and Equipment grants (€25,000) to support talented researchers and stimulate innovative collaborative research

2022 Spring

PRANAV BHAGIRATH - POSTDOC
Computational modelling combined with high-resolution 3D cardiac MRI in patients with ventricular arrhythmia: towards improving procedural efficacy of catheter ablation

MARK SMITS - POSTDOC
Evaluating the role of sphinganine in GLP-1 secretion ('SPHINGS')

LUCÍA CÓCERA ORTEGA - POSTDOC
Spatial cellular and transcriptomic map of Arrhythmogenic Cardiomyopathy

ILIAS ATTAYE - POSTDOC
Identification of post-prandial gut-derived metabolites in cardio-metabolic health, with an emphasis on sex and ethnic-specific associations

FEMKE PIERSMA - NURSING RESEARCH
Complications of electrical cardioversion for atrial fibrillation, a step towards a predictive model

2022 Summer

LOUIS HANDOKO, HARM JAN BOGAARD, OT BAKERMANS & FRANCES DE MAN - EQUIPMENT
Hemosphere monitor system for complete hemodynamic profiles in patients at rest and during exercise

TYLER KIRBY & JAN VAN DEN BOSSCHE - EQUIPMENT
Add-ons for a new confocal microscope

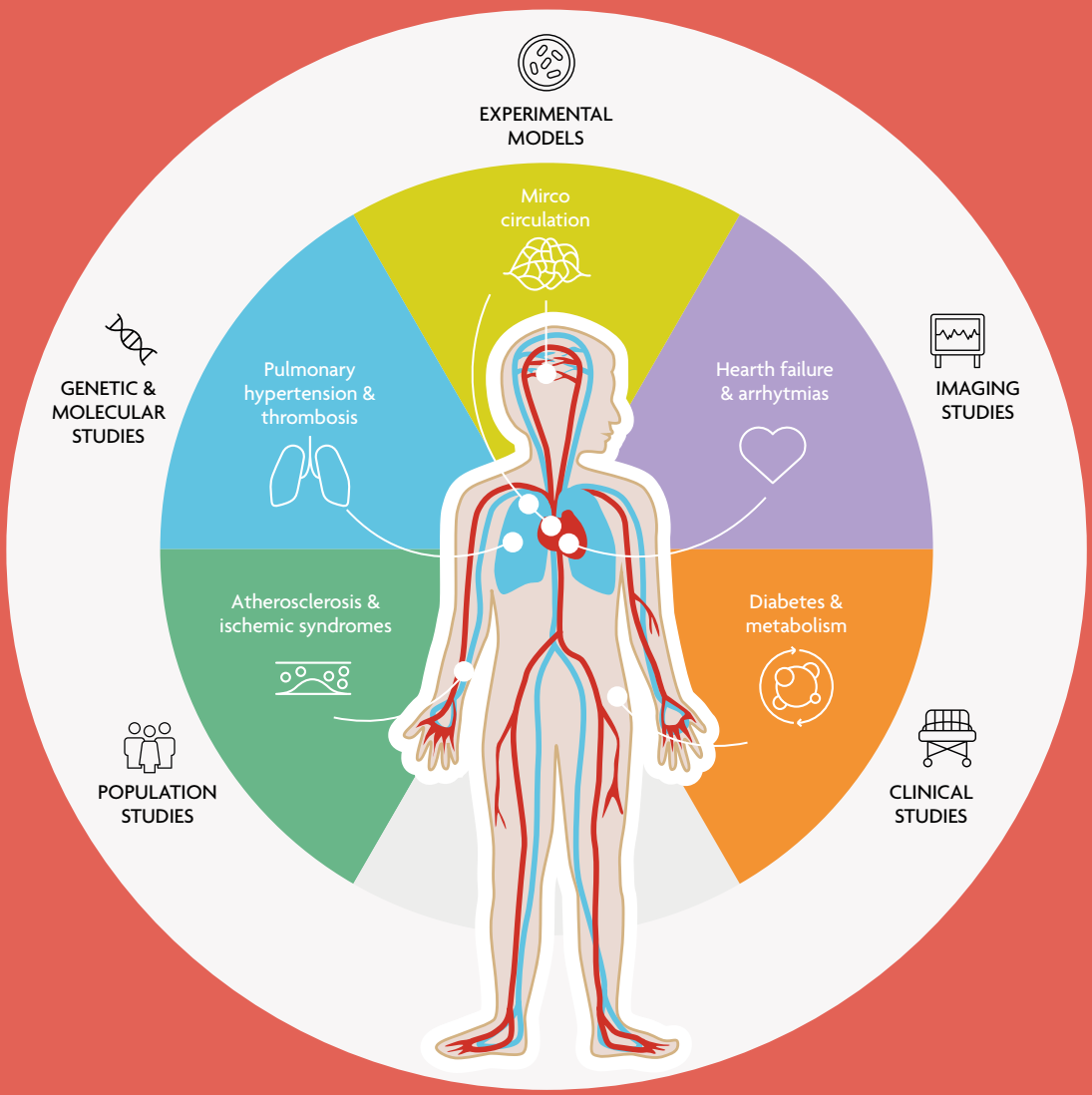
BRAM HULST, DANIËL VAN RAALTE, JEROEN HERMANIDES, ALEXANDER VLAAR, DENISE VEELO & CHARISSA VAN DEN BROM - EQUIPMENT
Oxygen & temperature monitor compatible in urinary catheters for non-invasive measurement of urinary oxygenation in perioperative & intensive care

AIDA LLUCIÁ VALLDEPERAS & FRANCES DE MAN - EQUIPMENT
Extension for the FlexCell Tissue Train 3D culture system

ELENA RAMPANELLI, DANIËL VAN RAALTE & PETER HENNEMAN - EQUIPMENT
GeoMx Digital Spatial Profiler (DSP) from Nanostring Technologies

Amsterdam UMC
University Medical Centers

Amsterdam Cardiovascular Sciences



In this edition of the ACS Magazine 2022 we introduce the new logos of our programs and organization chart created by Luumen. We would like to thank designer Karen Folkertsma who retired last year for her work and effort on the previous logos and ACS Magazines.